01-233
Yukon River Drainage Aerial Salmon Surveys

Investigators: National Park Service

FY2001 Budget: $24,800 **Total Budget (two years):**$47,100

Geographic Area: Yukon River **Information Type:** Stock Status and Trends

Issue:
The recent and unprecedented collapse of Yukon River drainage salmon stocks and the resulting subsistence harvest short-fall have increased the need to expand and update the database of Yukon River salmon escapement information. State and federal salmon fishery managers rely on such salmon abundance and geographic distribution information to make in-season management decisions. However, the Yukon River drainage is vast (approximately 330,000 square miles), so on-the-ground salmon escapement projects are not possible in all known salmon streams. Aerial escapement survey is a relatively inexpensive way to estimate the abundance of salmon in streams which otherwise could not be assessed. This proposal will provide funding for aerial assessment of streams and rivers known to produce salmon in the upper Yukon River and upper Kantishna drainages.

Objectives:
1) Estimate the abundance of spawning salmon by species in selected spawning streams.
2) Estimate the timing and distribution of spawning salmon by species in selected spawning streams.

Methods:
From July through November, investigators will fly in a single-engine plane to survey salmon streams in two different areas: the upper portion of the Yukon River drainage within the Yukon-Charley National Park and Preserve, and the upper portion of the Kantishna River drainage both within and next to Denali National Park and Preserve. The investigators will gather the following data for each stream or river they survey:
1) Coordinates of the stream terminus.
2) Survey date.
3) Time of day.
4) Estimates (by species) of live and dead salmon observed.
5) Survey method.
6) Weather conditions.
7) Characterization of water clarity/visibility.
8) Stream bottom coloration.
9) Coordinates of the up- and downstream limits of spawning activity.
10) Approximate distance surveyed.

11) Spawning activity (before, at, or after peak).
12) Overall characterization fo survey quality.
13) Observations of other fish species.
14) Comments.
15) Observer name and agency affiliation.

Investigators will carry topographic maps and a hand-held tape recorder to document locations. In both study areas, investigators will use radio-tracking gear to find chinook salmon that were tagged in the lower Yukon River by ADF&G.

Investigators will report aerial survey data to the ADF&G-AYK Region using aerial survey forms. The information will then be added to the ADF&G database. Investigators will also nominate any streams they survey that had not been known to support spawning salmon to be included in the State of Alaska Anadromous Fish Stream Catalog.

Products:
The investigator will produce an annual report to be completed by January 2002. He will also produce a comprehensive project summary report detailing the scope of the project, findings, and maps by January 2003.

Experience of Investigators:
Frederick Andersen is the primary investigator for this project. He came to the National Park Service after more than 28 years experience in Alaska fisheries management and research programs with ADF&G. Much of his work included aerial surveys of salmon spawning escapements.

Partnerships/Collaboration:
There have been preliminary discussions with representatives of the Tanana Chiefs Conference, the Circle Tribal Council, and the Council of Athabascan Tribal Governments about this project. As part of this proposal, one employee from each of these organizations will be trained in aerial survey techniques, including on-the-ground instruction in aerial species identification, spawning behaviors, preferred stream habitats, and estimating numbers of fish. Mr. Andersen and the employees will fly duplicate surveys of streams on the same day to calibrate their observations and refine their survey and estimating techniques.

Recommendation:
The funding requests in the Yukon River region, stock status and trends category, greatly exceeded available resources. As a result, difficult selection decisions had to be made. This project was not selected for funding recommendation for FY2001.

Justification:
The proposed project would be a new effort to conduct aerial salmon escapement surveys in the far upper reaches of the Yukon River drainage in Alaska, and in the upper Kantishna River. The Investigation Plan correctly notes the limitations to accuracy and precision of aerial survey methodology for estimating or indexing salmon escapement abundance. For these reasons, this technique is not a preferred method for long term monitoring. However, the proposed work is for a two-year period, and would help to address an informational gap on salmon distribution and timing in

the two identified study areas. Although not articulated in the plan, qualitative information on abundance might contribute to planning of more rigorous methods of assessment in the future, should that prove warranted. The exploratory aspect of the proposed work has merit, as does the inclusion of telemetry tracking relative to an ongoing chinook salmon study in the lower Yukon. The principal investigator has a substantial amount of experience that contributes significantly to the potential for success of this work. The intent to provide orientation and training to local tribal staff is excellent. Even if this is too limited an opportunity for full skill development, the association should contribute to increased awareness of salmon escapement distributions and reconnaissance techniques. Objectives are clear and achievable. The methods description supports achievement of the objectives. The budget appears reasonable for the scope of work.